What is claimed is:

1. A method for producing solid iron and carbon product from iron oxide material containing carbon compounds, comprising the steps of:

(a) providing a furnace, having a refractory surface;

(b) introducing conditioning materials into said furnace and placing said conditioning materials on said refractory surface;

(c) heating said conditioning materials on said refractory surface, forming a vitreous hearth layer;

(d) placing iron oxide materials in said furnace on said vitreous hearth layer;

(e) reducing said iron oxide materials in said furnace, to form metallized iron product;

(f) forming liquid iron and carbon globules, and slag particulates on said vitreous hearth layer, said globules separating from said slag particulates; and

(g) discharging solid iron product from said furnace.

2. The method of claim 1, wherein said step of introducing said conditioning materials further comprises conditioning said refractory surface with a material selected from the group consisting essentially of magnesium oxide compounds, silicon oxide compounds, iron oxide compounds, aluminum oxide compounds, and carbon compounds.

3. The method of claim 1, wherein said step of placing iron oxide materials is preceded by a step of placing a coating layer of carbon containing compounds onto said vitreous hearth layer.

4. The method of claim 1, wherein said step of heating is followed by a step of placing carbon containing compounds onto said vitreous hearth layer.

5. The method of claim 1, wherein said heating step further comprises heating said conditioning materials with a plurality of radiant heat sources at temperatures of about 1370°C to about 1600°C inside said furnace.

6. The method of claim 1, wherein said heating step further comprises heating said conditioning materials with a plurality of radiant heat sources at temperatures of about 1530°C to about 1600°C inside said furnace.

7. The method of claim 1, wherein said placing step further comprises introducing carbon containing compounds with said iron oxide materials onto said vitreous hearth layer.

8. The method of claim 1, wherein said reducing step further comprises exposing said iron oxide materials to a radiant heat source providing a temperature of about 1430°C to about 1520°C inside said furnace.

9. An apparatus for direct reduction of iron oxide material to a solid iron and carbon product, comprising:

(a) a furnace, said furnace having a refractory surface;

(b) means for introducing a layer of conditioning materials onto said refractory surface;

(c) means for heating said conditioning materials layer, forming a vitreous hearth layer;

(d) means for placing iron oxide material onto said vitreous hearth layer;

(e) means for reducing said iron oxide material on said vitreous hearth layer, said means for reducing forms a solid iron and carbon product; and

(f) means for removing solid iron and carbon product from said furnace.

10. The apparatus of claim 9, wherein the furnace is a rotary hearth furnace provided with a rotatable refractory surface.

11. The apparatus of claim 9, wherein said means for introducing said layer of conditioning materials comprises an application device selected from the group consisting of a spray apparatus, a screw conveyor, a belt conveyor or a vibrating pan.

12. The apparatus of claim 9, wherein said layer of conditioning materials, comprises a material selected from the group consisting essentially of magnesium oxide compounds, silicon oxide compounds, iron oxide compounds, aluminum oxide compounds, and carbon compounds.

13. The apparatus of claim 9, wherein said means for placing said iron oxide material further comprises means for placing a coating layer on said vitreous hearth layer, said coating layer including carbonaceous compounds that form a layer onto which said iron oxide material is placed.

14. The apparatus of claim 9, wherein said means for placing said iron oxide material comprises a conveyance device, said iron oxide material is positionable by said conveyance device onto said vitreous hearth layer.

15. The apparatus of claim 9, wherein said means for heating comprises a plurality of radiant heat sources providing heat at a temperature range of at least 1369° C to about 1600° C, said radiant heat sources maintaining said vitreous hearth layer within said temperature range.

16. The apparatus of claim 9, wherein said means for reducing said iron oxide material comprises a plurality of radiant heat sources providing heat at a temperature range of at least 1430° C to about 1520° C to said vitreous hearth layer.

17. The apparatus of claim 9, wherein said means for removing solid iron product comprises a collector, said collector removing said iron and carbon product from said vitreous hearth layer.

18. The apparatus of claim 9, wherein said coating layer further comprises a plurality of layers of materials, each successive layer applied on top of a previously introduced layer of materials, said coating layer including carbonaceous compounds.

19. The apparatus of claim 18, wherein said plurality of layers of materials further comprises an additional coating layer of carbonaceous compounds, said additional coating layer placed before said iron oxide material is placed.

20. A method for producing solid iron and carbon product from iron oxide material containing carbon compounds, comprising the steps of:

(a) providing a furnace, said furnace providing a refractory surface;

(b) introducing conditioning materials onto and across said refractory surface;

(c) heating said conditioning materials on said refractory surface, said heating step vitrifying said conditioning materials, forming a vitreous hearth layer;

(d) adding at least one layer of coating compounds on said vitreous hearth layer;

(e) placing said iron oxide material on said at least one layer of coating compounds;

(f) reducing said iron oxide material, said reducing step forming a solid iron and carbon product;

(g) forming liquid iron and carbon globules, and slag particulates on said vitreous hearth layer, said globules separating from said slag particulates; and

(h) discharging a solid iron and carbon product from said furnace.

21. The method of claim 20, wherein said introducing step further comprises introducing materials selected from the group consisting essentially of magnesium oxide compounds, silicon oxide compounds, iron oxide compounds, aluminum oxide compounds, and carbon compounds.

22. The method of claim 20, wherein said heating step further comprises heating said conditioning materials with a plurality of radiant heat sources providing heat at a temperature range of at least 1369° C to about 1600° C inside said furnace.

23. The method of claim 20, wherein said reducing step further comprises heating said iron oxide material with a plurality of radiant heat sources providing heat at a temperature range of at least 1430° C to about 1520° C at said vitreous hearth layer.

24. The method of claim 20, wherein said step of adding at least one layer of coating compounds, further comprises adding coating compounds selected from the group consisting essentially of graphite, charcoal, coal particulates, fire clay, and coke fines.

25. The method of claim 20, wherein said reducing step further comprises heating said iron oxide material, forming nuggets of iron material on top of said at least one layer of coating compounds.

26. A method for producing solid iron and carbon product from iron oxide material containing carbon compounds, comprising the steps of:

(a) providing a furnace, said furnace providing a hearth surface;

(b) adding a plurality of layers of conditioning compounds on said hearth surface;

(c) heating said plurality of layers, said heating step vitrifying said plurality of layers, forming a vitreous hearth layer;

(d) introducing at least one layer of coating materials onto and across said conditioning vitreous layer;

(e) inserting an additional layer of coating compounds onto said coating materials layer;

(f) placing said iron oxide material on said upper layer of carbon compounds;

(g) reducing said iron oxide material, said reducing step forming solid iron and carbon product;

(h) forming liquid iron and carbon globules, and slag particulates on said vitreous hearth layer, said globules separating from said slag particulates; and

(i) discharging solid iron and carbon product from said furnace.

27. The method of claim 26, wherein said adding step further comprises placing conditioning materials selected from the group consisting essentially of magnesium oxide compounds, silicon oxide compounds, iron oxide compounds, aluminum oxide compounds, and carbon compounds.

28. The method of claim 26, wherein said heating step further comprises heating said conditioning materials with a plurality of radiant heat sources providing heat at a temperature range of at least 1369° C to about 1600° C inside said furnace.

29. The method of claim 26, wherein said heating step further comprises heating said conditioning materials at a temperature range of at least 1530°C to about 1560°C inside said furnace.

30. The method of claim 26, wherein said reducing step further comprises heating said iron oxide material with a plurality of radiant heat sources providing heat at a temperature range of at least 1430°C to about 1520°C at said vitreous hearth layer.

31. The method of claim 26, wherein said step of introducing at least one layer of coating materials, further comprises adding coating materials selected from the group consisting essentially of graphite, charcoal, coal particulates, fire clay, and coke fines.

32. The method of claim 26, wherein said reducing step further comprises heating said iron oxide material, forming nuggets of iron material on top of said additional coating of carbon compounds onto said vitreous hearth layers.